or expanded, even deflexed and almost involute at times, and wavy or lobed; entirely white when young, shading in age into ochraceous-buff, ochraceous, and even orange above, remaining more pallid below; hygrophanous when moist, and slightly viscid or glutinous; flesh very soft, almost of waxy consistency, composed of very loosely woven mycelium in the center, becoming denser at the surface. Stem solid, equal or slightly broadened upward, 0.5–1^{mm} in diameter, white pruinose becoming pubescent with scattered white hairs at base. The hymenium surrounds the upper two-fifths to one-half of the length of the fruit body; basidia clavate, 18–24 × 4 μ, 4-spored, sterigmata up to 4 μ in length; spores broadly elliptical to subglobose, smooth, white, 3–4 μ; cystidia white, numerous, often 60–70 × 4–6 μ, usually curved and irregularly swollen toward the base where they arise from the trama, extending beyond the basidia only when young and by 2–4 μ, thin-walled and containing substances which blacken with osmic acid.

Type in Cornell University Herbarium, no. 15,445, collected from very rotten twigs and leaves of deciduous trees and conifers, but only under prostrate branches of *Taxus canadensis*, in Fall Creek gorge, Ithaca, N. Y., between October 19 and November 19, 1903.— CHARLES THOM, *Cornell University*.

NOTES ON SOUTHWESTERN AND MEXICAN PLANTS.

I. THE INDIGENOUS CENTAUREAS OF NORTH AMERICA.

THE first species of the genus Centaurea indigenous to North America was published by Nuttall in 1821, as *C. americana*. The species was originally collected in Arkansas, where it was said by Nuttall to grow "on the banks of streams, and in denudated alluvial situations, throughout the plains or prairies of the upper part of Arkansas territory."

Sprengel in the Supplement of the fourth volume of the *Systema vegetabilium* quite arbitrarily makes a new combination for Nuttall's plant, namely *C. Nuttallii*, having himself previously, in the third volume of the *Systema*, p. 407 (1826), used the combination *C. americana* for a Peruvian plant, which is very different from the North American species. Further, in 1831, D. Don, in Sweet's *British flower garden* 2 : *pl. 51*, characterizes and illustrates the species published by Nuttall under the name *Plectocephalus americanus*. Both of these combinations, *C. Nuttallii* and *Plectocephalus americanus*, are merely altered names for Nuttall's species and are invalidated by all present rules of

nomenclature. In 1837 DeCandolle published *C. mexicana*, based upon Berlandier's nos. 430 and 1750, collected between Bexar and the Trinity River, Texas. Later, *C. mexicana* was shown to be identical with *C. americana* Nutt.

A careful study of a large suite of specimens in the Gray Herbarium shows very clearly that we have at least two indigenous species of this genus in the southwest, one of which is new to science, and is readily separated from the older species on the involucral characters alone; its distribution, moreover, is more western and southern, and it grows at a higher altitude. *C. americana* has been so well described and illustrated that it is unnecessary to present here more than the literature and the citation of specimens. Of its congener, however, a description is given below. The two indigenous North American species as here recognized by the writer are as follows:

*Involucral bracts stramineous or the inner ones slightly purplish, pectinate with 3–8 pairs of lateral firm teeth.

C. AMERICANA Nutt. Jour. Acad. Phil. **2**: 117. 1821; Bart. Fl. Am. Sept. **2**: *pl. 50*. 1822; Colla, Hort. Ripul. App. i. 119. *pl. 6*. 1827; Reichb. Ic. Exot. **2**: *pl. 132*. 1828; DC. Prodr. **6**: 575. 1837; Torr. & Gray, Fl. N. Am. **2**: 453. 1843; Engelm. & Gray, Pl. Lindl. 14. 1845; Fl. Serres **4**: *pl. 327*. 1848; Gray, Pl. Wright. **1**: 125. 1852; Young, Fl. Texas 361. 1873; Meehan's Nat. Fls. II. **2**: *pl. 17*. 1880; Hemsl. Biol. Cent. Am. Bot. **2**: 253. 1881 in part, *i. e.*, excl. pl. Rothrock; Gray, Syn. Fl. **1**^{2}: 407. 1886; Coulter, Contrib. U. S. Nat. Herb. **2**: 244. 1891–94; Small, Fl. Southeastern U. S. 1308. 1903.— *C. Nuttallii* Spreng Syst. **4**: (Suppl.) 298. 1827. — *C. mexicana* DC. Prodr. **6**: 575. 1837.—*Plectocephalus americanus* Don in Sweet's Brit. Fl. Gard. **2**: *pl. 51*. 1831; Spach, Hist. Veg. **10**: 63.

UNITED STATES. Arkansas: specimen *ex hb. Durand.* Louisiana: *Dr. Leavenworth.* Texas: *Pope; Lindheimer*, nos. 114, 34; dry prairies, near Dallas, *Hall*, no. 373, *Reverchon; Drummond*, no. 169; between Bexar and the Trinity River, *Berlandier*, nos. 430, 1750; Kerrville, altitude 490 to 615^m, *Heller*, no. 1774; Weatherford, *Tracy*, no. 7896. New Mexico: Jornado del Muesto, *Dr. Wislizenus;* exp. from western Texas to El Paso, *Wright*, no. 405; White Mountains, altitude 1850^m, *Wooton*, no. 195. MEXICO. Coahuila: Saltillo, *Dr. Edward Palmer*, nos. 766 (coll. of 1880), 294 (coll. of 1898) white-flowered form. Chihuahua: Bachimbo Cañon, *Pringle;* Rio Sta Maria, *Thurber*, no. 748.

** Involucral bracts greenish or stramineous below, conspicuously tipped with chestnut-brown, pectinate-fimbriate with 8–12 pairs of lateral rather slender teeth.

C. Rothrockii Greenman, n. sp. Annual or biennial (?), 3–10 ^{dm} high: stem erect, simple below, sparingly branched above, sulcate-striate, glabrous or slightly hirtellous; leaves lanceolate to oblong-lanceolate, 3–12 ^{cm} long, 1–3.5 ^{cm} broad, sessile and often semiamplexicaul, acuminate, acute, sometimes terminated by a conspicuous mucro, entire to slightly sinuate-dentate, hirtellous-puberulent on both surfaces, hispidulous on the margins, resiniferous-dotted; the uppermost leaves much reduced and not infrequently subfimbriate near the tip: peduncles thickened above: heads large, 3–5 ^{cm} high, including the rays 3–15 ^{cm} in diameter: involucre subcampanulate, in well-developed specimens about 3 ^{cm} high and 4 ^{cm} broad; bracts of the involucre about 9-seriate, rather closely imbricated, lanceolate, pectinate-fimbriate in the upper third, bearing 8–12 pairs of brownish ciliated rather slender teeth: the neutral marginal flowers (rays) elongated, conspicuous, usually purple, much exceeding the lemon-yellow flowers of the disk: mature achenes oblong-obovate, 5 ^{mm} long, black and smooth.—*C. americana* Rothrock in Wheeler's Report 180. 1878, not Nutt.—*Centaurea* sp. Engelm. in Wislizenus Report 107. 1848, Reprint 23. UNITED STATES. Arizona: Chiricahua, *Rothrock*, no. 527 (type). MEXICO. Chihuahua: near Colonia Garcia, altitude 2300 ^{m}, August 9, 1899, *Townsend & Barber*, no. 247: August 1–20, 1899, *E. W. Nelson*, no. 6175; southeastern Chihuahua, August–November 1885, *Dr. Edward Palmer*, no. 415; Llanos, *Dr. Wislizenus*. Durango: Sierra Madre, 18.5 ^{km} north of Guaucevi, altitude 2460–2770 ^{m}, August 18, 1898, *E. W. Nelson*, no. 4774. Zacatecas: between Bolaños and Guadalajara, September 20, 1897, *Dr. J. N. Rose*, no. 3033. Oaxaca: La Mixteca, Huauclilla, District of Nochixtlan, altitude 2000 ^{m}, June 26, 1898, *F. Lopez* (*Conzatti & González*, no. 781).

These two species are among the most attractive of the genus; both are well worthy of garden cultivation. *C. Rothrockii* is equal, if not superior, to its sister species *C. americana*, which has already found its way to many American gardens. The writer takes pleasure in dedicating the handsome species here described to Dr. Joseph Trimble Rothrock, now of the State Forestry Commission of Pennsylvania.

II. ON THE GENUS ASPILIOPSIS.

In the "Supplementary leaflet" to the *Contributions from the Gray Herbarium of Harvard University* new series, no. xxv, issued September

25, 1903, the writer proposed the name *Aspiliopsis* for the plant described in the body of the same contribution, p. 106, as *Altamirania*, n. gen. of Verbesineae (Compositae). Professor Theo. D. A. Cockerell, of Colorado Springs, has most courteously called my attention to the fact that no binomial was given under *Aspiliopsis*. This may be formed as follows: **Aspiliopsis pachyphylla**, n. comb. *Altamirania pachyphylla* Greenm. Proc. Am. Acad. 39: 106. 1903.—J. M. GREENMAN, *Gray Herbarium, Cambridge, Mass.*

VITALITY OF SEEDS.

THE statement in the GAZETTE for February by J. W. T. Duvel concerning the preservation of seeds buried in the soil reminds me of some tests I made years ago, reporting the results in the *Proceedings* of the Society for the Promotion of Agricultural Science for 1894. In September 1882 I gathered and shelled 50 heads of red clover from each of five plants, and kept them in two-ounce bottles, each lot by itself. On June 7, 1894, I tested 50 seeds of each for vitality, and again on June 23, 1894, I tested another set of 50 seeds each. The average of the two lots of all seeds was 35.8 per cent. of living seeds. Of the hundred taken from one of the bottles 66 seeds germinated; while of those from another bottle only 4 seeds out of the hundred germinated. In these cases some of the seeds of each lot retained vitality for nearly twelve years.

In the *Proceedings* of the same society for 1899, I reported the results of tests of the vitality of seeds of weeds buried by me in "clean" dirt in bottles for twenty years. The seeds germinated very unevenly. I name the species of seeds of which some germinated: Amaranthus retroflexus, Brassica nigra, Capsella Bursa-pastoris, Lepidium virginicum, Anthemis cotula, Malva rotundifolia, Oenothera biennis, Polygonum hydropiper, Portulaca oleracea, Rumex crispus, Stellaria media, Verbascum thapsus. None of the following germinated: Ambrosia artemisiaefolia, Erechthites hieracifolia, Euphorbia maculata, Plantago major, Setaria glauca, Trifolium repens, Bromus secalinus, Lychnis githago. I give the names of seeds by which they were known when buried; at the time of their resurrection the names of some of them had been changed!—W. J. BEAL, *Agricultural College, Michigan.*